Collie River Road Bridge BR4930A Construction

Supporting Document: NVCP Clearing Application

Shire of Harvey

17 October 2025

→ **The Power of Commitment**

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Executive summary

The Shire of Harvey (the Shire) is replacing Bridge BR4930A on Collie River Road in Burekup (the Proposal), which provides local access over the Collie River (see Figure 1). The existing bridge has deteriorated over time and now requires replacement.

Approval under the *Environmental Protection Act 1986* (EP Act) is needed for construction activities that may impact the environment. This Native Vegetation Clearing Permit (NVCP) application outlines the proposed impacts which are clearing under EP Act approval.

Construction activities to replace the bridge at Collie River Road in Burekup will include the clearing of 0.083 hectare (ha) of native vegetation within the 0.26 ha Development Envelope (DE). The clearing of native vegetation for the construction activities represents less than 2.5% of the vegetation surveyed. The clearing is unlikely to have any impact to Threatened or Priority-listed flora, or other flora of conservation significance, as none were identified during the survey.

Clearing of vegetation includes impact of up to 0.11 ha of fauna habitat including 0.02 ha of riparian vegetation along the Collie River and removal of six significant trees. None of the significant trees being removed have been assessed as being suitable for Black Cockatoos and there are not considered to be significant impacts to the species, or to Western Ringtail Possums resulting from clearing activities.

The bridge works may reduce water quality during construction and have some localised, short-term impacts to aquatic fauna within and downstream of the construction footprint, no long-term impacts to the aquatic fauna are expected. The Shire has used the hierarchy of avoid, minimise, reduce and rehabilitate to mitigate the environmental impacts of the works through revision of the designs during the planning process. There may be indirect impacts to fauna habitat due to introduction and/or spread of weeds and vehicle strike, however these will be managed via a Construction EMP (CEMP) for the works. The proposal is not expected to increase the incidence of flooding, increase salinity or erosion along drainage lines due to the limited clearing and disturbance within the DE. The CEMP will outline measures to manage flood risk potential and maintain surface water quality during construction based on the final design and construction methodology. Bridge construction works are likely to have direct physical impacts on local populations of Carters Freshwater Mussels (CFM) observed within the DE, and relocation of potentially impacted mussels would be required. The Carters Freshwater Mussel Management Plan (CFM MP) will guide relocation of CFM outside the construction footprint and will be updated based on the final design and construction methodology.

A significance assessment in accordance with the *Significant Impact Guidelines 1.1 - Matters of National Environmental Significance* (DEWHA, 2013) was undertaken to identify any residual environmental impacts requiring approval under other environmental legislation, including the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act). The significance assessment noted that while there may be residual impacts to CFM from construction works occurring within the Collie River, the potential impacts can be sufficiently managed through the implementation of a suitable Carters Freshwater Mussel Management Plan.

This report is subject to, and must be read in conjunction with, the limitations set out in Section 1.2 and the assumptions and qualifications contained throughout the Report.

Table 1 Acronyms

Acronym	Definition
ACH Act	*Aboriginal Cultural Heritage Act 1976*
ASS	Acid Sulphate Soils
BoM	Bureau of Meteorology
CEMP	Construction Environmental Management Plan
CFM	Carters Freshwater Mussel
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DBCA	Department of Biodiversity, Conservation and Attractions
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DE	Development Envelope
DF	Disturbance Footprint (including construction footprint and laydown area)
DPIRD	Department of Primary Industries and Regional Development
DPLH	Department of Planning, Lands and Heritage
DSEWPaC	Department of Sustainability, Environment, Water, Population and Communities
DWER	Department of Water and Environmental Regulation
EMP	Environmental Management Plan
EPA	Environmental Protection Authority
EP Act	*Environmental Protection Act 1986*
EPBC Act	*Environmental Protection and Biodiversity Conservation Act 1999*
ESA	Environmentally Sensitive Area
FCT	Floristic Community Type
FRTBC	Forest Red-tailed Black Cockatoo
GKB	Gnaala Karla Booja Aboriginal Corporation
HBI	Harry Butler Institute
IBRA	Interim Biogeographic Regionalisation for Australia
MNES	Matters of National Environmental Significance
NVCP	Native Vegetation Clearing Permit
P1, P2, P3, P4, P5	Priority flora/fauna categories (WA conservation status)
PDWSA	Public Drinking Water Source Areas
PEC	Priority Ecological Community
PMST	Protected Matters Search Tool
RiWI Act	*Rights in Water and Irrigation Act 1914*
SWL	Standing Water Level
TEC	Threatened Ecological Community
WRP	Western Ringtail Possum

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1. Introduction

1.1 Project background

The Shire of Harvey is replacing Bridge 4930A on Collie River Road in Burekup, which provides local access over the Collie River (see Figure 1). The existing bridge has deteriorated over time and now requires replacement. The project is located in the Collie River catchment which is 3,745 km^2 around 200 km south of Perth. The catchment extends approximately 100 km inland with headwaters in the Darling Plateau, which flow into the Wellington Dam before traveling down the Darling Scarp and across the Swan Coastal Plain to discharge into the Leschenault Estuary, immediately north of Bunbury. The Collie River system is highly seasonal with highest flows occurring over the winter months when rainfall is highest. During summer, in most parts, the upper river system naturally ceases to flow and forms a series of river pools.

Approval under the *Environmental Protection Act 1986* (EP Act) is required for any impacts to the environment from the construction activities. EP Act approval will allow impacts to vegetation and tree clearing to be undertaken, as outlined in this Native Vegetation Clearing Permit (NVCP) application supporting document. A significance assessment has been undertaken as part of this assessment to identify any other impacts which may require approval under other environmental legislation, including the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act). The significance assessment is included in Appendix B.

The Development Envelope (DE) for the project includes the construction footprint and laydown area. The bridge construction area is shown in Figure 2 and the laydown area in Figure 3. The total clearing area will be significantly less than 1 ha.

1.2 Purpose of this report

The purpose of this Native Vegetation Clearing Permit (NVCP) supporting document is to inform the Department of Water and Environmental Regulation (DWER) of the outcome for the assessment against the ten clearing principles for the proposed works. This document has been prepared in support of an application for a NVCP (purpose) under Section 51E of Part V of the EP Act. This document includes:

– An overview of works required and description of clearing activities to be undertaken (Section 2)
– An overview of existing environment (Section 3)
– An assessment of potential impacts identified (Section 4)
– Management measures proposed to minimise environmental impacts during construction (Section 5)
– An assessment against the Ten Clearing Principles, as defined in Schedule 5 of the EP Act (Section 6)
– Identification of other environmental and heritage approvals applicable to the proposed works (Section 7)
– Assessment whether offsets are applicable to the proposed works (Section 8)

1.3 Scope and limitations

This report: has been prepared by GHD for Shire of Harvey and may only be used and relied on by Shire of Harvey for the purpose agreed between GHD and Shire of Harvey as set out in section 1.2 of this report.

GHD otherwise disclaims responsibility to any person other than Shire of Harvey arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

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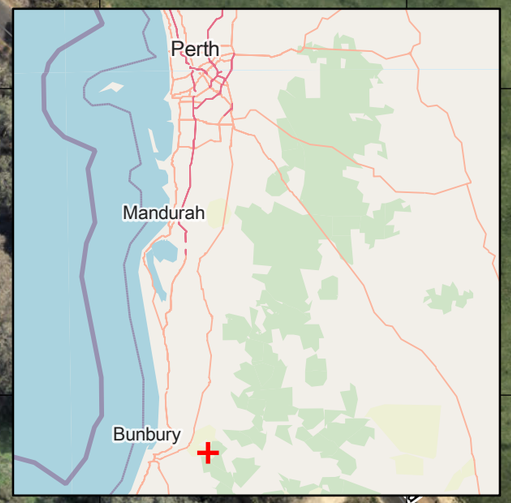

Legend

- Minor Road
- Miscellaneous Road

Clearing footprint

- Construction footprint
- Laydown

nearmap

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Paper Size ISO A3

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Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 50

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Site Plan

Project No. **12647859**
Revision No. **B**
Date **02/10/2025**

FIGURE 1

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Data source: OpenStreetMap: Map data © OpenStreetMap contributors, Microsoft, Facebook, Google, Esri Community Maps contributors, Map layer by Esri Nearmap WMS Server: . Created by: rbrown3

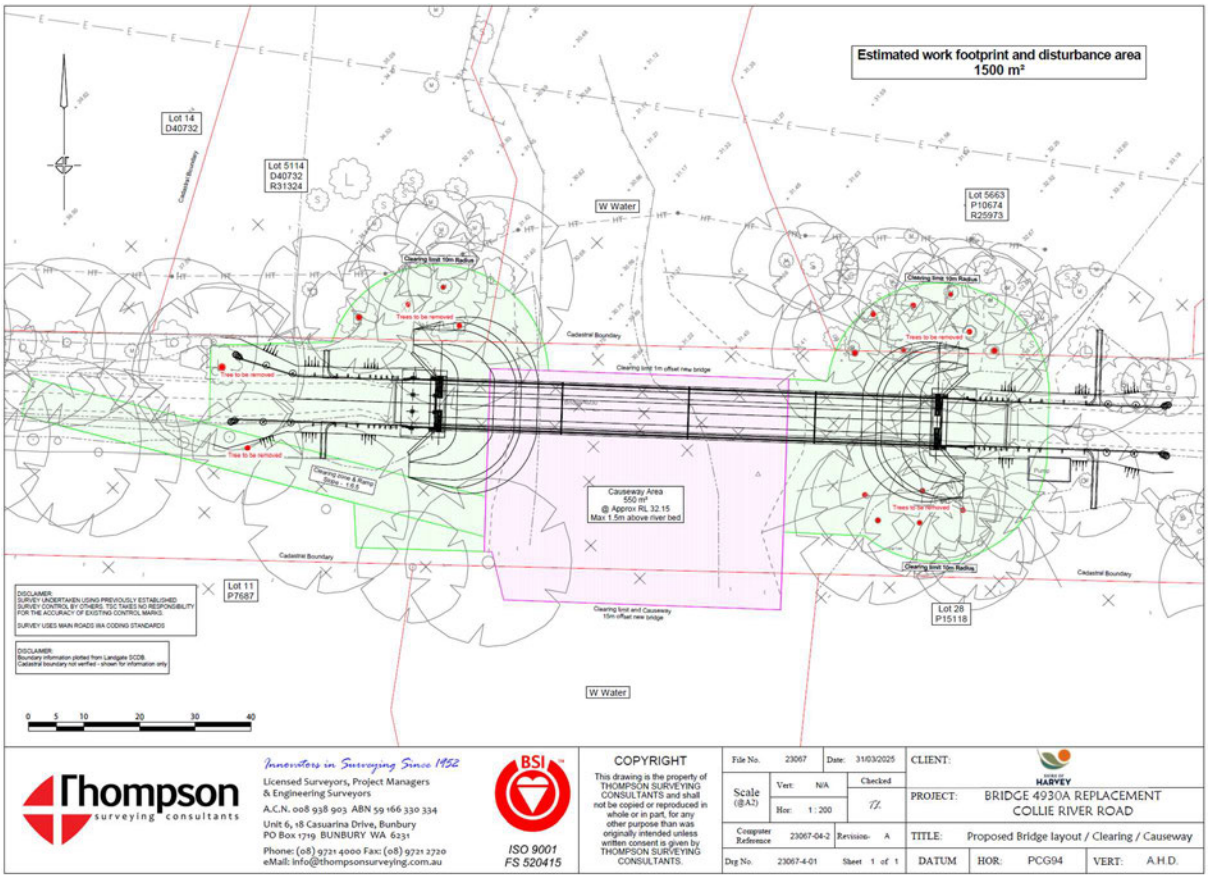


Figure 2 *Proposed bridge layout*

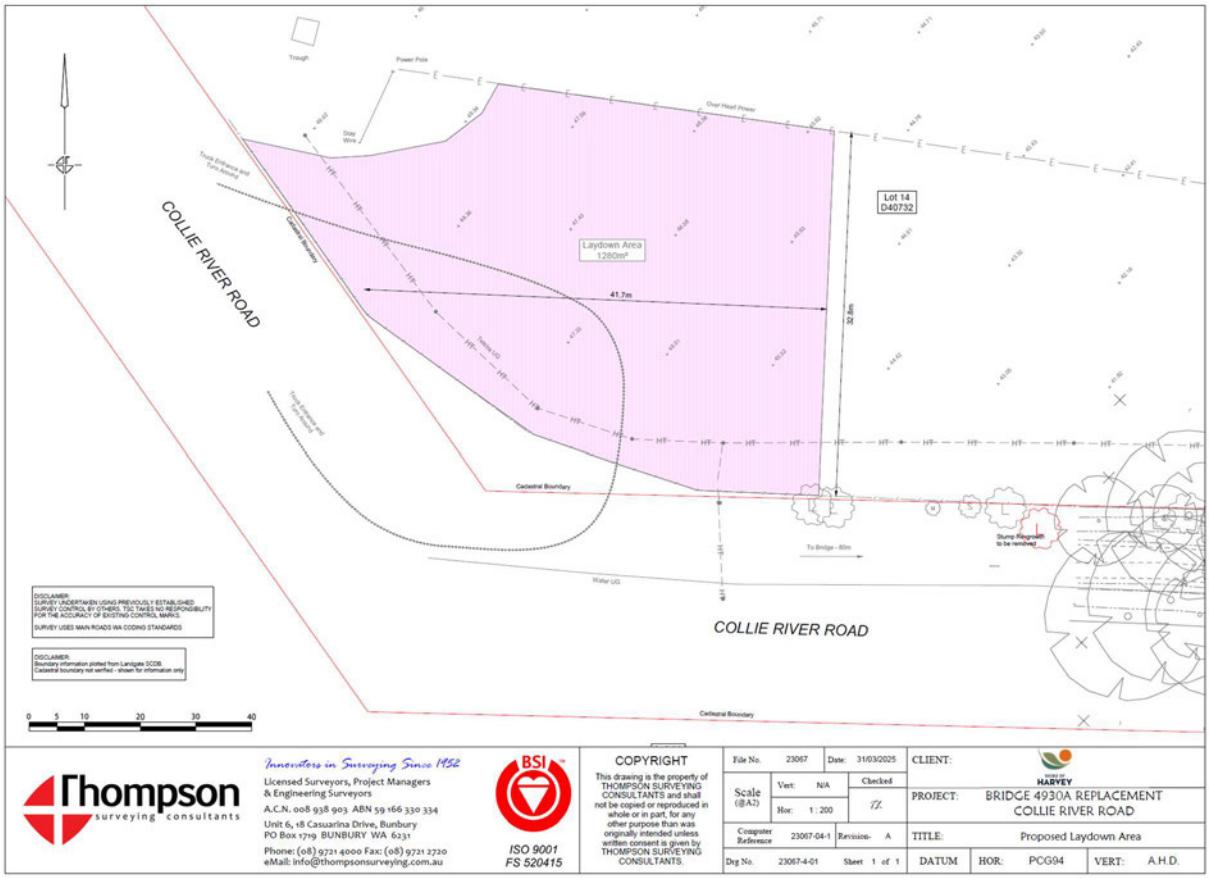


Figure 3 *Proposed laydown area*

2. Project description

The Shire of Harvey is replacing Bridge BR4930A on Collie River Road in Burekup, which provides local access over the Collie River (see Figure 1). The existing bridge has deteriorated over time and now requires replacement. The project is located in the Collie River catchment which extends approximately 100 km inland with headwaters in the Darling Plateau, which flow into the Wellington Dam before traveling down the Darling Scarp and across the Swan Coastal Plain to discharge into the Leschenault Estuary. The Collie River system is highly seasonal with highest flows occurring over the winter months when rainfall is highest. During summer, in most parts, the upper river system naturally ceases to flow and forms a series of river pools.

The Shire has considered the environmental features of the Collie River in development of the construction methodology. The detailed designs have been amended in response to the baseline surveys undertaken for both Flora and Vegetation (Section 3.5) and Fauna (Section 3.7) to avoid significant environmental values and minimise impacts resulting from the clearing of native vegetation (Section 4). This has been achieved through an amended design and construction methodology without compromising a sound construction of the replacement bridge undertaken in a reasonable timeframe.

Design

The design has included the use of a causeway to allow access to the river during construction and removal of the existing bridge piles within the river. The proposed design of the causeway includes a geofabric base to assist with the preservation of the Collie riverbed, this geotextile will be removed after construction works are completed.

The causeway will be accessed via a ramp on right side of road alignment to grade down to proposed causeway, with a width of 15 m, as required for crane access. Clean granite spalls with a diameter of 100-200 mm or rail ballast would be proposed for causeway base of necessary thickness. The temporary causeway will be required to cross full width of river to access Abutment 2 and will include the installation of a sufficient number of suitably sized culverts to maintain water flow during construction.

Clearing of 0.083 ha of native vegetation is required to enable access to the river for decommissioning and construction activities. The proposed clearing method for the works to be completed is mechanical clearing and bulldozing within the DE.

Construction

The causeway has been developed to enable the use of a 250 t hydraulic crane. The bridge construction includes the following steps:

– Clearing of vegetation within the disturbance footprint
– Relocation of Carters Mussels
– Installation of silt curtains upstream and downstream
– Installation of the temporary causeway including culverts
– Construction of ramp on right side of road alignment to grade down to proposed causeway.

The proposed clearing timeframe is for construction starting in November 2026 with all works completed by 30 April 2027.

Management

Management measures to minimise potential environmental impacts from construction works will be described in an Environmental Management Plan (CEMP). Potential impacts from disturbance of acid sulphate soils (ASS) will be managed during construction via the installation of a temporary causeway, rather than dewatering. The use of silt curtains in the river will be used to minimise turbidity during construction and maintain water quality. The silt curtains will be placed upstream and downstream of the temporary causeway to control turbidity in the Collie River and prevent aquatic fauna such as Carters Mussels from entering the site following relocation. The proposed management measures are included in Section 5.

3. Existing environment

3.1 Biogeographic region, location and land use

The Survey Area is located within the Jarrah Forest Interim Biogeographic Regionalisation for Australia (IBRA) bioregion, specifically within the Northern Jarrah Forest (JAF01) IBRA sub-region (DCCEEW, 2022; 2023). It is entirely within land zoned as rural per the Department of Planning, Lands and Heritage (DPLH) Region Scheme - Zones and Reserves [Database] (DPLH-023) (DPLH, 2025).

3.2 Landforms and soils

The Proposal is located within the geomorphic region of the Darling Plateau which occurs to the east of the Swan Coastal Plain. The DE falls within the Western Darling Range Zone 255 soil landscape zone (Department of Primary Industry, Resources and Development (DPIRD, 2022a). This unique zone is described as '*Moderately dissected lateritic plateau on granite with deeply incised valleys, includes the Darling Scarp on the western margin. Soils are formed in laterite, lateritic colluvium and weathered in-situ granite and gneiss'*.

This landscape zone has been further classified into soil landscape systems, with the DE mapped within the Lowden Valley System (255Lv) (DPIRD, 2022b). The system is described by Tille et al. (1998) as '*Deep gneissic valleys, in the south of the Western Darling Range. Loamy earth, loamy duplex, gravel and stony soils. Jarrah-marri forest'.* Soils across these zones can range from lateritic colluvium to granite weathered in-situ and gneiss (Tille, Moore, & Griffin, 1998). The following land characteristics occur across the DE:

– Relief of 10-40 m
– Slopes at 3-15%
– Soils are loamy earths with some clays and gravels

The desktop assessment using the DWER Acid Sulfate Soil (ASS) Risk Map for the Swan Coastal Plain (DWER-055) indicated an extremely low probability of ASS occurring within the DE (DWER, 2017).

3.3 Hydrology

A desktop review of hydrological data available in the Government of Western Australia's databases identified the water resources which intersect with the Proposal (Table 2).

Table 2 Water Resources

Aspect	Details	Results
Groundwater Areas (DWER-034)	Groundwater areas proclaimed under the *Rights in Water and Irrigation Act 1914* (RiWI Act)	None present
Surface Water Areas (DWER-041)	Surface water areas proclaimed under the RiWI Act	None present
Irrigation District	Irrigation Districts proclaimed under the RiWI Act	Collie River Irrigation District
Rivers	Rivers proclaimed under the Rights in RiWI Act	None present
Public Drinking Water Source Areas (DWER-033)	PDWSA is a collective term for Water Reserves, Catchment Areas and Underground Pollution Control Areas declared under the provisions of the *Metropolitan Water Supply, Sewage and Drainage Act 1909 (WA) or the Country Areas Water Supply Act 1947* (WA)	None present

3.3.1 Groundwater

Water Information Reporting website (**https://wir.water.wa.gov.au**) provided by DWER, was used to infer the groundwater levels near to the site. There are no groundwater monitoring bores within 5 km of the Proposal, so an average of the nearest groundwater bores within 7.5 km has been used to infer the standing water level (SWL) for the Proposal. The seven bores nearby have a SWL which ranges from 0.46 to 18.29 mbgl with an average of 8.11 mbgl.

3.3.2 Surface water

The Proposal is located in south-west Western Australia within the Collie River Catchment. The Collie River is a perennial watercourse and intersects the Proposal (Crossman & Li, 2015) as shown in Figure 5. The mean salinity at this location was 1,461 mg/L, which is within the marginal brackish salinity category (DWER, 2025).

3.4 Climate

The Project is located within a region with a Mediterranean type climate with hot, dry summers and cool, wet winters. At the Collie East weather station (Station no. 009994), the average annual rainfall 684.2 mm with around 75% of annual rainfall occurring between May and September (BOM, 2025). The Collie River system is highly seasonal with highest flows occurring over the winter months when rainfall is highest. During summer, in most parts, the upper river system naturally ceases to flow and forms a series of river pools. Figure 4 shows the monthly statistics of temperature and rainfall for Collie East weather station.

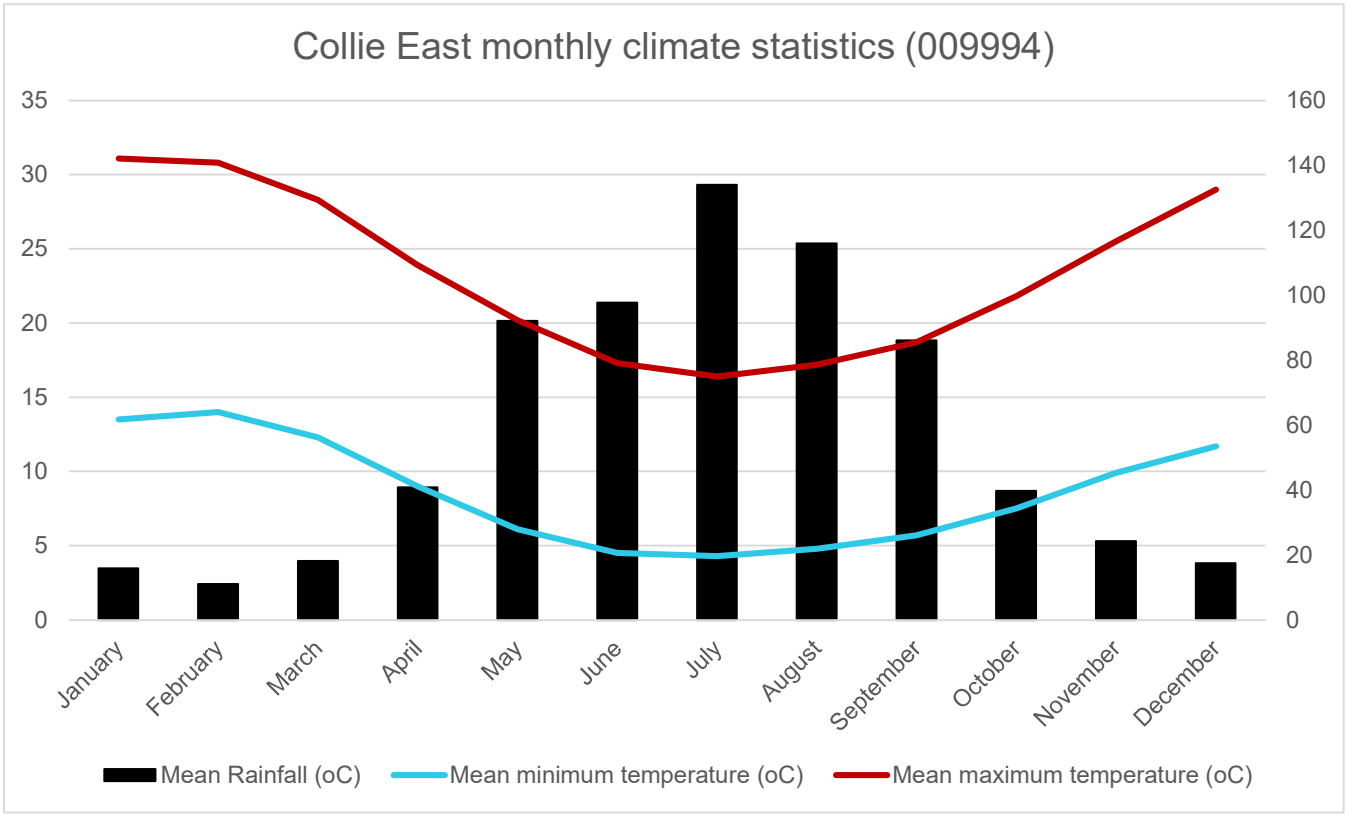
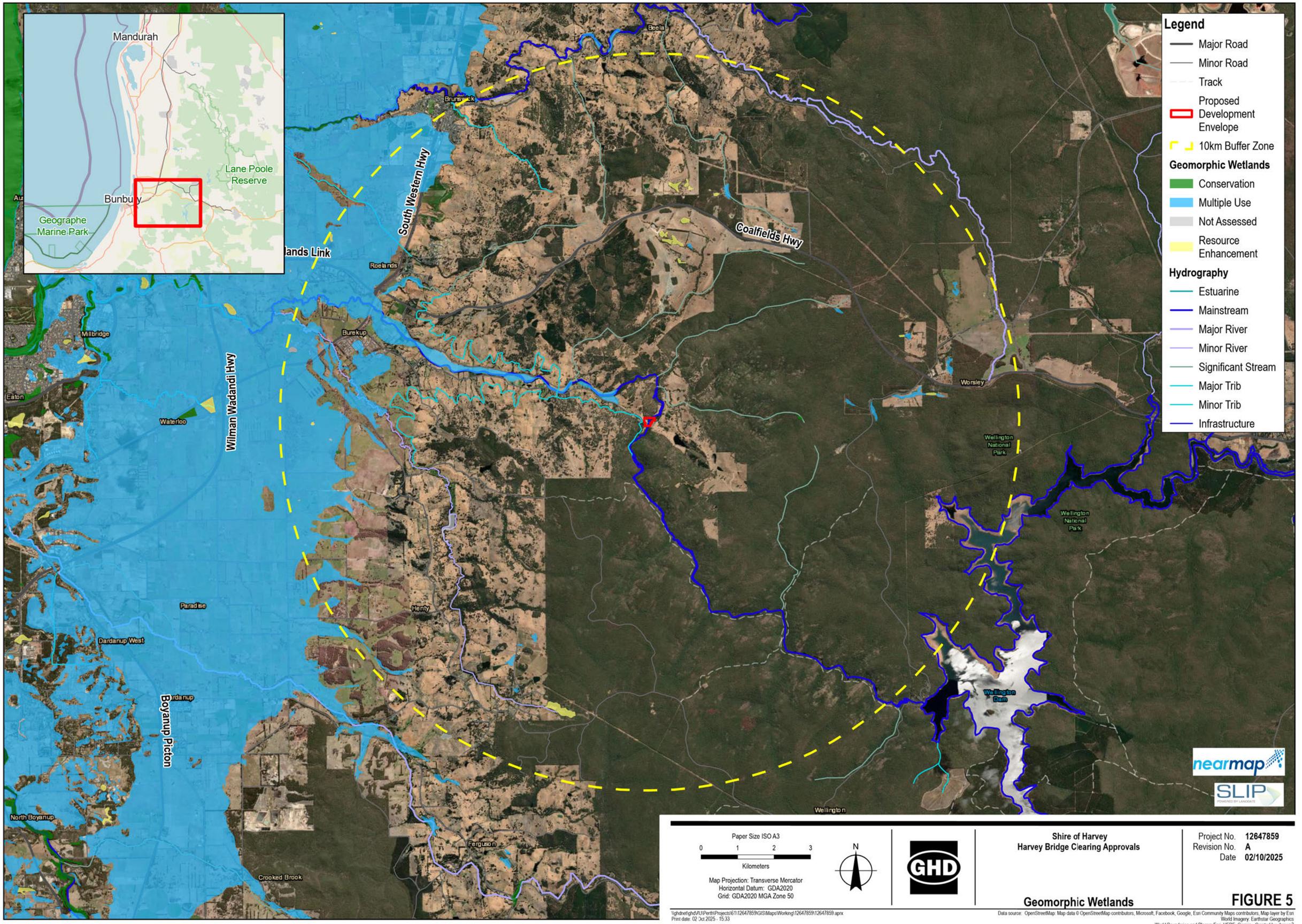


Figure 4 ***Collie East monthly climate statistics***



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Kilometers

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Geomorphic Wetlands

Project No. **12647859**
Revision No. **A**
Date **02/10/2025**

FIGURE 5

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3.5 Pre European Vegetation

3.5.1 Broad vegetation mapping and extent

According to the vegetation complex mapping from Mattiske and Havel (1998) as updated by Webb et al in (2016), one complex named the Lowden Complex is mapped across the survey area.

A systematic survey of native vegetation in WA undertaken during the 1970's by Beard and others to describe systems at a scale of 1:250,000. The survey area is comprised of one Beard pre-European vegetation association: association 1184 'Medium woodland-fringing; jarrah, marri, *Eucalyptus rudis* & *Agonis flexuosa*' (Beard, 1976).

3.6 Flora and vegetation

Ecoedge Environmental Services (Ecoedge) undertook a spring Detailed and Targeted Flora and Vegetation survey undertaken on 8 October and 15 November 2024 which covered 4.67 ha. The survey was undertaken in accordance with the *Environmental Protection Authority (EPA) Technical Guidance - Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016).

Prior to the survey, a desktop assessment was undertaken for the Proposal, using the relevant databases provided by State and Federal agencies including:

– Department of Biodiversity, Conservation and Attractions (DBCA) datasets
  - Threatened and Priority Flora list (DBCA, 2025).
  - Threatened and Priority Ecological Communities database extracts (DBCA, 2024a)
  - Threatened Flora database and Western Australian Herbarium database extracts (DBCA, 2024b)
  - Threatened and Priority Ecological Communities (TEC and PEC) listings (DBCA, 2023a; 2023b)
  - Atlas of Living Australia Geomorphic Wetlands, Swan Coastal Plain (SCP) [Dataset] (DBCA-019) (DBCA, 2022)
– Environmentally sensitive areas (ESA) distribution maps [Dataset] (DWER, 2021).
– Beard's pre-European vegetation association mapping dataset (DPIRD-006) (DPIRD, 2025)
– South West Ecological Linkages Technical Report (Molloy, O'Connor, & Wallrodt, 2009)
– DCCEEW Protected Matters Search Tool (PMST) [Dataset] (DCCEEW, 2025).

Ecoedge assessed the likelihood of occurrence for fifty-seven Threatened and Priority flora taxa listed in the available databases, as potentially occurring within the survey area. Nine taxa were considered to possibly occur within the Proposal (Table 3).

Table 3 Threatened and Priority flora taxa assessed as possibly occurring in the survey area

Taxon	Cons. code	Flowering
Aponogeton hexatepalus	P4	Jul-Oct
Bolboschoenus medianus	P1	Summer
Caladenia procera	T (CR)	Sep-Oct
Dillwynia dillwynioides	P3	Aug-Dec
Eleocharis keigheryi	T (VU)	Aug-Nov
Eucalyptus rudis subsp. cratyantha	P4	Jul-Sep
Gonocarpus keigheryi	P2	Dec -Feb
Grevillea ripicola	P4	Jan-Apr/Nov-Dec
Juncus meianthus	P2	Nov-Jan

3.6.1 Vegetation types and condition

Ecoedge (2024) identified two vegetation types within the survey area (Figure 6):

– Unit A comprised the riverine vegetation adjacent to the Collie River. It formed an open forest dominated by *Eucalyptus rudis* subsp. *rudis* (Flooded gum), *Corymbia calophylla* (Marri) and occasionally *Eucalyptus patens* (Blackbutt).
– Unit B is comprised of the open forest dominated mainly by *Corymbia calophylla* (Marri) which occurs on rocky clay-loam soils upslope of unit A.

Most vegetation within the DE was in Degraded/Completely Degraded (84%) condition. The main causes of degradation were partial clearing, livestock grazing and accompanying weed invasion. 90% of vegetation unit B was Degraded/ Completely Degraded whereas Unit A, which has been less impacted by human interactions, had 75% of the area mapped as in Good/ Very Good condition. Five of the survey quadrats placed by Ecoedge (2024) were within vegetation unit A, with only one situated within vegetation unit B as most of the unit was too degraded. Unsurprisingly, because the survey area lies in the Lowden Valleys soil-landscape system and about 7 km east of the Swan Coastal Plain there was not a close match between the six quadrats installed within the survey area and any of the quadrats from the Swan Coastal Plain (SCP) survey. The multivariate analysis compared the quadrats installed within the survey area with the data from the Swan Coastal Plain surveys showed a low correspondence with most of the Swan Coastal Plain floristic community types (FCT). The most similar FCT was FCT 11 (Wet forests and woodlands), a relatively species-poor FCT often dominated by *Eucalyptus rudis*. FCT11 was chosen as the most likely community type because all of the survey area quadrat clustered most frequently with this FCT. FCT 11 is not a Threatened or Priority ecological community.

3.6.2 Significant ecological community

Neither of the vegetation units in the survey area is representative of a Threatened or Priority ecological community. However, unit A, being a riverine vegetation type, has particular conservation value for its role in protecting the riverbanks and because much of the riverine vegetation of the Collie River downstream of the survey area has been cleared or severely degraded. Vegetation unit A within the survey area meets the criteria to be considered distinctive wetland vegetation as it includes groundwater dependant species such as *Eucalyptus rudis*, *Astartea scoparia*, *Melaleuca viminea* and *Machaerina juncea.*

3.6.2.1 Regional linkages

The Collie River Ecological Linkage intersects the survey area, following the path of the river and providing a corridor of vegetation that has been assigned the highest tier of PV rating - 1a (Ecoedge, 2024). This rating has been assigned because the vegetation is in proximity to the river linkage and its connectivity to Wellington National Park to the south and east of the survey area (Ecoedge, 2024).

3.6.3 Flora diversity

The Ecoedge (2024) field survey identified 84 taxa within the DE with 50 (60%) of those taxa identified as being introduced species (Appendix E).

3.6.4 Conservation significant flora

The Ecoedge (2024) field survey did not identify any Threatened flora listed under the *Biodiversity Conservation Act 2016* or under the *Environmental Protection Biodiversity Conservation Act 1999.* No DBCA listed Priority species were identified within the DE. All 57 threatened or priority taxa identified as potentially occurring during the desktop screening were assigned a post-survey residual likelihood of “unlikely”.

3.6.5 Weeds

Ecoedge (2024) recorded the presence of four introduced species within the DE. Four of these species represented Declared pests; *Asparagus asparagoides* (Bridal creeper), *Solanum linnaeanum* (Apple of Sodom), *Rubus laudatus* (Blackberry) and *Gomphocarpus fruticosus* (Narrowleaf cotton bush) (DCCEEW, 2025).

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Coffle River Rd

Legend

- Minor Road
- Miscellaneous Road
- Proposed Development Envelope
- Clearing area footprint

Vegetation Type

- A; Riparian Vegetation
- B
- Cleared
- Riverbed

nearmap

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Meters

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Vegetation within the Proposed Clearing Area

Project No. **12647859**
Revision No. **C**
Date **02/10/2025**

FIGURE 6

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Coolie River Rd

Legend

- Minor Road
- Miscellaneous Road
- Proposed Development Envelope
- Clearing area footprint

Vegetation Condition

- Very good
- Good
- Degraded
- Completely degraded
- Water

nearmap

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Paper Size ISO A3

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Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 50

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Vegetation Condition within the Proposed Area

Project No. **12647859**
Revision No. **C**
Date **02/10/2025**

FIGURE 7

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Collie River Rd

Legend

- Minor Road
- Miscellaneous Road
- Proposed Development Envelope
- Clearing area footprint

Fauna Habitat

- Blackbutt. Yarri, Suitable DBH no hollows
- Dead, Suitable DBH no hollows
- Dead, Unsuitable hollow
- Flooded gum, Potential size no signs Confirmed
- Flooded gum, Suitable DBH no hollows
- Flooded gum, Unsuitable hollow
- Jarrah, Suitable DBH no hollows
- Marri, Suitable DBH no hollows
- Marri, Unsuitable hollow
- Peppermint, WRP drey

Fauna Habitat Type

- Flooded Gum (*Eucalyptus rudis*) and Peppermint (*Agonis flexuosa*) woodland
- Marri (*Corymbia calophylla*) woodland
- Flooded Gum (*Eucalyptus rudis*) and Peppermint (*Agonis flexuosa*) woodland with planted exotic Eucalyptus spp.
- Marri (*Corymbia calophylla*) woodland with planted exotic Eucalyptus spp.
- Box Elder (**Acer negundo*), Flooded Gum (*Eucalyptus rudis*) and Peppermint (*Agonis flexuosa*) woodland
- Planted exotic *Eucalyptus* and *Corymbia* spp. with occasional Flooded Gum (*Eucalyptus rudis*)
- Riverbed
- Cleared

nearmap

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Paper Size ISO A3

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Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 50

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Significant Trees within Proposed Clearing Area

Project No. **12647859**
Revision No. **D**
Date **08/10/2025**

FIGURE 8

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Data source: WANlow: Landgate / SLIP. Created by: rbrown3

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6311550
6311500
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6311400
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6311300

Collie River Rd

Legend

- *Trichosurus vulpecula*
- Minor Road
- Miscellaneous Road
- Proposed Development Envelope
- Clearing area footprint

nearmap

SLIP POWERED BY LANDGATE

Paper Size ISO A3

0 10 20 30

Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 50

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Shire of Harvey
Harvey Bridge Clearing Approvals

Recorded Conservation Significant Fauna Species

Project No. **12647859**
Revision No. **B**
Date **02/10/2025**

FIGURE 9

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Data source: WANlow: Landgate / SLIP. Created by: rbrown3

3.7 Fauna

A desktop assessment using the DBCA Threatened, Specially Protected, and Priority Fauna Database [Dataset]. and Protected Matters Search Tool (PMST) (DBCA, 2025; DCCEEW, 2025). The desktop searches identified the following threatened fauna species or species habitat, listed as 'known to', or 'may occur' within the Proposal:

Birds

- *Botaurus poiciloptilus* (Australasian Bittern) - EN
- *Zanda baudinii* (Baudin's Black Cockatoo) – EN
- *Zanda latirostris* (Carnaby's Black Cockatoo) – EN
- *Calyptorhynchus banksii naso* (Forest Red-tailed Black-Cockatoo) – VU
- *Falco hypoleucos* (Grey Falcon) – VU
- *Leipoa ocellata* (Malleefowl) – VU

Mammals

- *Bettongia penicillata* ogilbyi (Woylie) – EN
- *Myrmecobius fasciatus* (Numbat) - EN
- *Dasyurus geoffroii* (Chuditch) – VU
- *Setonix brachyurus* (Quokka) – VU
- *Pseudocheirus occidentalis* (Western Ringtail Possum) – CR

Invertebrates

- *Westralunio carteri* (Carters Freshwater Mussel) – VU.

SW Environmental (2025a) undertook a Basic and Targeted fauna survey to inform and support the proposed construction works, identifying habitat values and risk to conservation significant fauna. The Targeted survey component targeted three Black Cockatoo species (Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksii* subsp. *naso*) (Vulnerable), Baudin's Cockatoo (*Zanda baudinii*) (Endangered) and Carnaby's Cockatoo (*Zanda latirostris*) (Endangered)), Western Ringtail Possum (*Pseudocheirus occidentalis*) (WRP) (Critically Endangered).

Carters Freshwater Mussel (*Westralunio carterii*) (CFM) (Vulnerable) (SW Environmental, 2025b) and Aquatic Fish (Harry Butler Institute (HBI) Murdoch University, 2025) were surveyed for separately to this survey report.

Field work consisted of a diurnal site visit on 7 February 2025 and nocturnal spotlighting across non-consecutive nights the 7 and 10 February 2025 (SW Environmental, 2025a).

3.7.1 Fauna Habitat

The fauna survey undertaken by SW Environmental (2025a) recorded the following potential fauna habitat types within the Survey Area:

1. Flooded Gum (*Eucalyptus rudis*) and Peppermint (*Agonis flexuosa*) woodland
2. Marri (*Corymbia calophylla*) woodland
3. Flooded Gum (*Eucalyptus rudis*) and Peppermint (*Agonis flexuosa*) woodland with planted exotic *Eucalyptus* and *Corymbia* spp.
4. Marri (*Corymbia calophylla*) woodland with planted exotic *Eucalyptus* and *Corymbia* spp.
5. Box Elder (**Acer negundo*), Flooded Gum (*Eucalyptus rudis*) and Peppermint (*Agonis flexuosa*) woodland
6. Planted exotic *Eucalyptus* and *Corymbia* spp. with occasional Flooded Gum (*Eucalyptus rudis*)

3.7.2 Fauna

Twenty-two fauna taxa were observed within the Survey Area during the surveys. Recorded taxa included 14 birds, six mammal, one frog and one bivalve. Of the taxa observed, Forest Red-tailed Black Cockatoo (FRTBC) and Carters Freshwater Mussel (CFM) are listed as Vulnerable and Baudin's Cockatoo is listed as Endangered. Numerous other animals are likely to occur but are cryptic or would not have been detected during the surveys (such as bats, many reptiles and additional frogs which may not have been calling). In addition, many species may only use the site as a part of a larger area of occupancy, for example, birds.

A threatened fauna evaluation table was prepared for conservation significant fauna based on the desktop assessment and site survey. It excludes aquatic, invertebrate, marine, marine migratory, and regionally extinct species. Fauna of conservation significance that may occur are summarised in Table 4.

Of the twenty-three terrestrial vertebrate fauna of conservation significance returned in desktop database searches, SW Environmental (2025a) recorded two taxa: FRTBC and Baudin's Cockatoo during the survey. The survey also recorded the aquatic conservation significant taxa of Carters Freshwater Mussel (CFM).

Eight vertebrate fauna of conservation significance may occur within the survey area at times including Carnaby's Cockatoo and Western Ringtail Possum (WRP) (Table 4). Aquatic taxa were surveyed by Murdoch University (Harry Butler Institute (HBI) Murdoch University, 2025) on 30 April.

Table 4 Conservation significant fauna that may occur in the survey area, habitat suitability and field observations

Scientific Name	Common name	Commonwealth	WA	Habitat type	Likelihood of occurrence
Calyptorhynchus banksii naso	Forest Red-tailed Black Cockatoo	VU	VU	Present – core	Present
Zanda baudinii	Baudin's Cockatoo	EN	EN	Present – core	Present
Westralunio carteri	Carters Freshwater Mussel	VU	VU	Present – core	Present
Zanda latirostris	Carnaby's Cockatoo	EN	EN	Present – core	Possible
Hydromys chrysogaster	Rakali	–	P4	Present – core	Possible
Isoodon obesulus fusciventer	Quenda, Southern Brown Bandicoot	–	P5	Present – core	Possible
Bettongia penicillata ogilbyi	Woylie, brush-tailed bettong	EN	CR	Present – supporting	Possible
Dasyurus geoffroii	Chuditch, western quoll	VU	VU	Present – supporting	Possible
Phascogale tapoatafa wambenger	South-western brush-tailed phascogale, wambenger	–	CD	Present – supporting	Possible
Pseudocheirus occidentalis	Western ringtail possum	CR	CR	Present – supporting	Possible
Falsistrellus mackenziei	Western false pipistrelle	–	P4	Marginal	Possible
Notamacropus irma	Western brush wallaby	–	P4	Marginal	Possible
Setonix brachyurus	Quokka	VU	VU	Marginal	Possible

3.7.2.1 Conservation Significant Species

Black Cockatoos

The field survey methodology was based on the Commonwealth referral guidelines for black cockatoos (DCCEEW, 2022a) and black cockatoo species profiles (Saunders, D.A and Ingram, J.A., 1987; DPAW, 2013; Saunders, 1986). Black cockatoo habitat surveys included an assessment of suitable DBH trees, tree hollow assessment, foraging habitat assessment, and roosting habitat. Vegetation mapping compiled by Ecoedge (2024) was ground-truthed by SW Environmental (2025a) during the field survey and updated for use as a basis for black cockatoo foraging habitat quality. Feed residue was noted if observed.

84 trees with DBH measuring over 50 cm were recorded during the field survey (SW Environmental, 2025a). Suitable DBH tree locations (*Trees with suitable DBH without hollows*) are presented in Figure 8. Twelve of these contained hollows, with only one containing a hollow that is potentially large enough for black cockatoos (10-15 cm aperture, Flooded gum, ID 15, 60 cm DBH). The hollow was less than 10 m high, and no fauna were observed to be utilising the hollow at the time of survey.

Two black cockatoo roosts were recorded within the survey area, one being a Baudin's cockatoo roost and the other being FRTBC. The roosts only appeared to utilised by small family groups and had low amounts of whitewash, indicating they might be temporary. Neither of these were observed in the proposed clearing area, with detail on the significance of the survey results provided in Section 4.2.2.1.

WRP

WRP targeted surveys included diurnal and nocturnal surveys. The diurnal survey on February 7, 2025 included a general habitat assessment and WRP scat searches broadly across the survey area at the base of trees, on fallen timber and bare ground. The presence or absence of dreys and hollows was noted. Nocturnal spotlight surveys conducted on 6 and 10 February 2025, did not identify any WRP within the survey area. A total of 27 Common Brushtail Possums (CBP) (*Trichosurus vulpecula*) were observed across the two evenings, with 18 identified on the first night, and nine on the second night. Two dreys were observed in *Agonis flexuosa* within Habitat type 1, however no WRP scat was found.

WRP are likely to occur within and surrounding the survey area in low densities, utilising the drainage line for dispersal linking areas of suitable habitat. Peppermints were one of the key structural species within the survey area, one of the taxa forming the basis of WRP diet and characteristic within habitat critical to WRP survival (DPaW, 2017; Jones, How, & Kitchener, 1994). There is a potential that the high number of CBP within the Survey Area may be a factor inhibiting the establishment of WRP populations, due to interspecific competition factors such as territorial disputes or competition for hollows. Detail on the significance of the survey results are described in Section 4.2.2.2.

3.7.3 Aquatic fauna

Harry Butler Institute (HBI) (2025) conducted an aquatic faunal survey (teleost fishes and decapod crustaceans) on the 30 April 2025 at the Collie River Rd crossing, in Burekup. The aim of the survey was to identify any listed threatened aquatic species at the site and determine if a comprehensive management plan was required to manage the any identified risks from construction.

The survey detected five native teleost fish species, two native decapod crustacean species, and two introduced teleosts. The most abundant native fish species recorded was Western Minnow (*Galaxias occidentalis*), a common and widespread fish in freshwaters of southwest WA. The most abundant decapod crustacean was the Southwest Glass Shrimp (*Palaemon australis*), another southwest WA endemic that is common throughout the region. Eastern Gambusia (*Gambusia holbrooki*), an exotic teleost common in fresh water throughout the region and across Australia was the most numerous fish species recorded. HBI compared the data collected in the (2025) survey to a previous survey from 2019 in Beatty et. al. (2020). HBI (2025) observed that the species richness and relative abundance data was similar to the previous results, which indicated that the aquatic fauna community at this site remained stable over the past five years (Harry Butler Institute (HBI) Murdoch University, 2025).

Significantly, no currently listed threatened species were recorded. It appears that the population of Balston's Pygmy Perch (*N. balstoni*) known anecdotally from the Collie River has either been extirpated or is in such low abundance that it has evaded detection in six aquatic fauna surveys at this site. Neither *N. balstoni*, nor any other listed threatened freshwater teleost or decapod has been reported elsewhere in the Collie River catchment. As such, a comprehensive management plan for the native teleost and decapod species at this site is not necessary. Detail on the significance of the survey results is described in Section 4.2.2.3.

3.7.4 Carters Freshwater Mussel

Carters Freshwater Mussel were initially recorded by SW Environmental (2025a) during the fauna survey for the Proposal. They were observed around the piles of the existing bridge across the Collie River and are expected to exist in suitable substrate within the disturbance footprint. To provide an understanding of the population present in Collie River in the vicinity of the bridge replacement works a Targeted Survey for CFM was completed by SW Environmental (2025a) on 5 and 6 May 2025 (Appendix D).

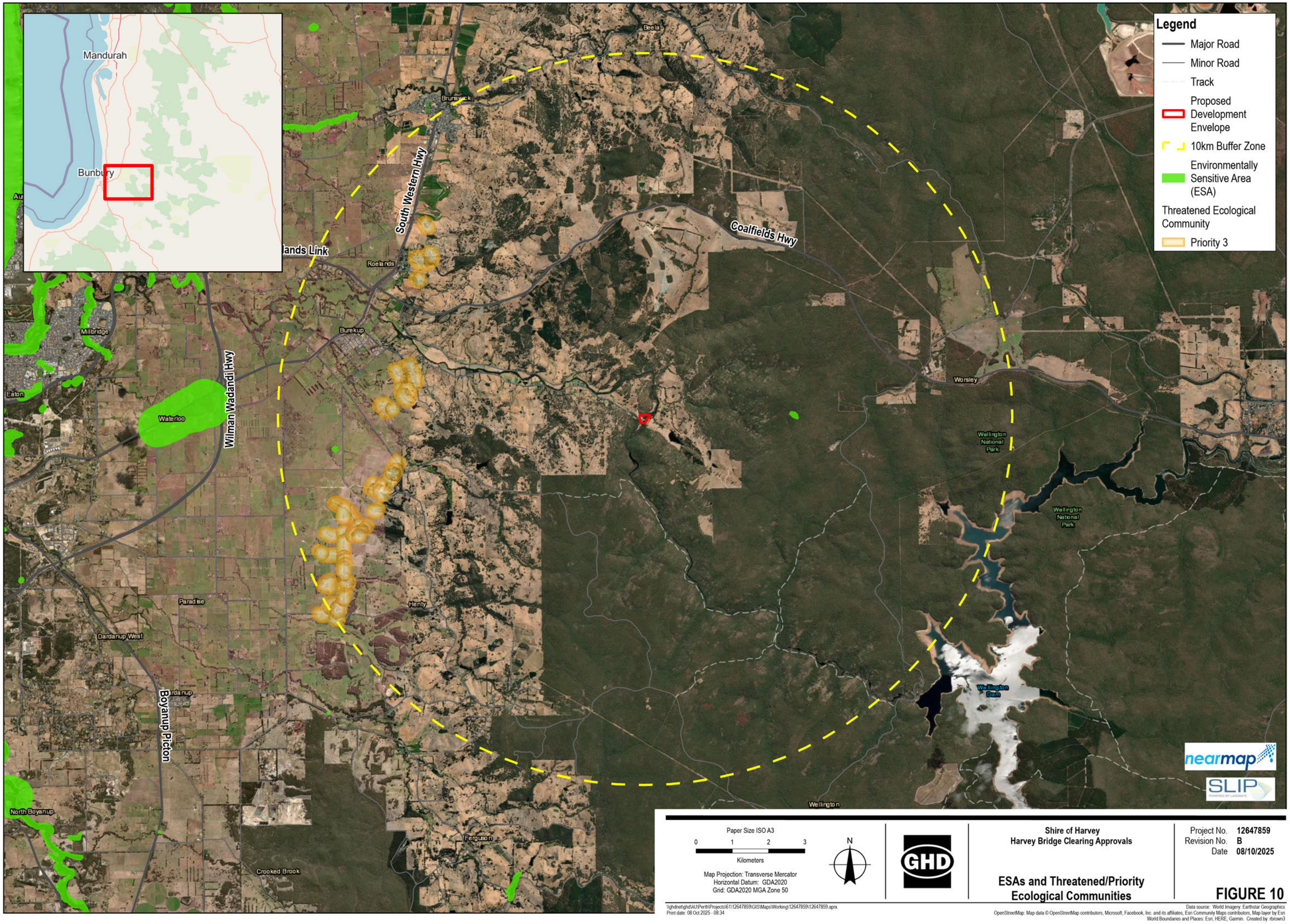
SW Environmental (2025a) found a total of 271 live mussels during the survey, with a mean density of 3.4 ± 0.8 mussels/m^2 for the quadrats. In addition, SW Environmental (2025a) found 31 dead CFM during the survey (10.3%). CFM were observed along both banks and in off-bank habitat upstream and downstream of the existing bridge, in densities ranging from 0-58 mussels/m^2. No mussels were observed in quadrats under the existing bridge and habitat was likely too shallow and rocky to support mussel colonisation. Detail on the significance of the survey results is provided in Section 4.2.2.4.

3.8 Environmentally sensitive areas

Environmentally sensitive areas (ESA) are protected under the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004*. ESA's are protected due to environmental values recognised at WA or National level (DWER, 2021) and include:

– Defined wetlands and riparian vegetation within 50 m
– Areas covered by Threatened Ecological Communities (TEC)
– Area of vegetation within 50 m of threatened flora
– Bush Forever sites
– Declared World Heritage property sites.

There are no ESAs mapped within or in proximity to the DE. The closest ESA is located approximately 3.8 km to the east and is associated with a Conservation Category (CC) wetland (UFI 2900) (Figure 10).



Paper Size ISO A3

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Kilometers

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 50

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ESAs and Threatened/Priority Ecological Communities

Project No. 12647859
Revision No. B
Date 08/10/2025

FIGURE 10

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4. Assessment of impacts

4.1 Potential impacts to vegetation and flora

4.1.1 Vegetation

Two vegetation units are described and mapped for the Development Envelope (Ecoedge, 2024). Unit A comprised the riverine vegetation adjacent to the Collie River. It formed an open forest dominated by *Eucalyptus rudis* subsp. rudis (Flooded gum), *Corymbia calophylla* (Marri) and occasionally *Eucalyptus patens* (Blackbutt). Three main variations occur within the unit which have a different understorey: the riverbank, channels where preferential flow of water takes place when the river overflows its banks and the sandy ridges between the river and the adjacent channels.

Vegetation unit B is comprised of the open forest dominated mainly by *Corymbia calophylla* (Marri) which occurs on rocky clay-loam soils upslope of unit A. This unit has been subject to heavy ongoing livestock grazing and most of the area contains no native understorey. Potential impacts to native vegetation include:

– Removal of approximately 0.083 ha of native vegetation.
– Introduction or spread of weeds on site
– Dust impacts to adjacent vegetation

Of the 4.68 ha survey area, 3.31 ha has been identified as native vegetation. The DE is 0.26 ha and includes clearing of 0.083 ha of vegetation within the construction footprint and laydown area. The clearing of native vegetation for the construction activities represents less than 2.5% of the vegetation surveyed. The vegetation types and associated condition for areas proposed to be cleared for the works is detailed in Table 5.

Table 5 Extent of proposed vegetation clearing

Description	Condition	Survey area (ha)	Clearing footprint (ha)	Laydown (ha)
Open mid-height forest *of Eucalyptus rudis*, *Corymbia calophylla* and occasionally *Eucalyptus patens over low woodland of Agonis flexuosa* and *Trymalium odoratissimum* over open tall shrubland of *Acacia alata*, *Astartea scoparia*, *Calycopeplus oligandrus*, *Dodonaea viscosa* subsp. *angustissima* over very open low shrubland of *Clematis pubescens*, *Hibbertia sylvestris*, *Veronica plebeia* over open sedgeland of *Lepidosperma effusum*, *Machaerina juncea* with scattered forbs including *Pteridium esculentum*, *Patersonia occidentalis* and isolated *Microlaena stipoides* grass on grey-brown loam. (Along the edge of the river there is a narrow band of *Astartea scoparia* and *Melaleuca viminea*, with occasionally **Bambusa* sp., *Darwinia citriodora,* **Ficus carica*, **Rubus laudatus,* and the tall sedge *Lepidosperma striatum*).	Very Good	0.38	0	-
	Good	0.06	0.008	-
	Degraded	0.25	0.014	-
	Completely Degraded	0.04	-	-
Open mid-height forest of *Corymbia calophylla* and occasionally *Eucalyptus marginata* over open low woodland of *Agonis flexuosa* over forbs including *Geranium dissectum*, **Medicago polymorphus* and grasses **Briza maxima*, **Ehrharta longiflora, *Lolium perenne*, on rocky or gravelly grey-brown clay-loam. (On the east side of the river planted and escaped exotic species such as **Eucalyptus citriodora*, **E. globulus*, **Acer negundo*, **Bougainvillea glabra*, **Washingtonia filifera,* and **Ficus macrophylla* are present in this unit).	Very Good	0	0	-
	Good	0.26	0	-
	Degraded	1.23	0.02	0.001
	Completely Degraded	1.09	0.04	
Vegetation total		**3.31**	**0.082**	**0.001**
Riverbed	Water	0.2	0.02	
Cleared	Completely Degraded	1.17	0.05	0.1
Total		**4.68**	**0.152**	**0.101**

4.1.2 Flora

There are no threatened or priority-listed flora, or other flora of conservation significance identified by Ecoedge (2024) within the survey area or within the DE or disturbance footprint (Appendix E).

4.2 Potential impacts to fauna and fauna habitat

Fauna habitat will be impacted by the decommissioning and construction associated with the replacing of the bridge across the Collie River. The DE includes a disturbance footprint (clearing footprint and laydown area) of 0.26 ha (Figure 2). The SW Environmental (2025a) survey described the fauna and fauna habitat within the DE (Figure 8) and assessed the potential impacts. Potential impacts to fauna and fauna habitat include:

– Clearing of 0.11 ha of fauna habitat including 0.02 ha of riparian vegetation along the Collie River, and removal of six significant trees
– Reduction in water quality during construction which may impact aquatic fauna including disturbance to Carters Mussels located in the Collie River
– Decline in fauna habitat due to introduction and/or spread of weeds
– Vehicle strike

4.2.1 Fauna habitat

Clearing associated with the construction activities has the potential to impact fauna diversity and fauna habitat. The proposed clearing of 0.11 ha of fauna habitat for construction represents less than 5% of the fauna habitat surveyed. The fauna habitats within the DE will remain well connected and part of a larger contiguous landscape of similar habitats within the local area and surrounding region. Table 6 outlines the extent of clearing within the DE against each fauna habitat type.

Table 6 Extent of clearing within each fauna habitat

Fauna habitat type	Use of habitat by fauna type	Total fauna habitat in survey (ha)	Fauna habitat in DF (ha)
Flooded Gum (*Eucalyptus rudis*) and Peppermint (*Agonis flexuosa*) woodland	**General Fauna:** High **Baudin's cockatoo:** Nil **Carnaby's cockatoo:** Low **FRTBC:** Nil	1.43	0.02
Marri (*Corymbia calophylla*) woodland	**General Fauna:** Low to Moderate **Baudin's cockatoo:** High **Carnaby's cockatoo:** High **FRTBC:** High	0.83	<0.01
Flooded Gum (*Eucalyptus rudis*) and Peppermint (*Agonis flexuosa*) woodland with planted exotic *Eucalyptus* and *Corymbia* spp.	**General Fauna:** Moderate **Baudin's cockatoo:** Low **Carnaby's cockatoo:** Low **FRTBC:** Low	0.43	0.04

Fauna habitat type	Use of habitat by fauna type	Total fauna habitat in survey (ha)	Fauna habitat in DF (ha)
Marri (*Corymbia calophylla*) woodland with planted exotic *Eucalyptus* and *Corymbia* spp.	**General Fauna:** Low **Baudin's cockatoo:** Low **Carnaby's cockatoo:** Low **FRTBC:** Low	0.17	0.01
Box Elder (**Acer negundo*), Flooded Gum (*Eucalyptus rudis*) and Peppermint (*Agonis flexuosa*) woodland	**General Fauna:** Moderate **Baudin's cockatoo:** Nil **Carnaby's cockatoo:** Nil – Low **FRTBC:** Nil	0.17	0.00
Planted exotic *Eucalyptus* and *Corymbia* spp. with occasional Flooded Gum (*Eucalyptus rudis*)	**General Fauna:** Moderate **Baudin's cockatoo:** Nil – Low **Carnaby's cockatoo:** Nil – Low **FRTBC:** Nil – Low	0.14	0.02
Riverbed	**General Fauna:** Low (terrestrial fauna) **Baudin's cockatoo:** Nil **Carnaby's cockatoo:** Nil **FRTBC:** Nil	0.20	0.02
Fauna Habitat Total		**3.37**	**0.11**
Cleared	**General:** Low **Baudin's cockatoo:** Nil **Carnaby's cockatoo:** Nil **FRTBC:** Nil	1.30	0.15
Total		**4.67**	**0.26**

4.2.2 Fauna

4.2.2.1 Black Cockatoos

Black cockatoo surveys (habitat assessment and tree surveys) were conducted during the diurnal survey. Of the 84 trees surveyed, with DBH measurements exceeding 50 cm, one tree contained a suitable size hollow with no signs of use (tree ID 15) was. Although technically suitable based on dimensions, the hollow in tree ID 15 was considered unlikely to be used by black cockatoos due to the low height and marginal internal dimensions. Available hollows may be utilised by target fauna other than black cockatoos (such as WRP). There are 18 trees which will be removed to undertake the decommissioning and construction works, 6 of which are considered significant (SW Environmental, 2025a). None of the significant trees being removed have been assessed as being suitable for Black Cockatoos.

4.2.2.2 Western Ringtail Possum (Critically Endangered)

The diurnal survey on February 7 included general habitat assessment and WRP scat searches broadly across the survey area at the base of trees, on fallen timber and bare ground. SW Environmental (2025) noted that the likelihood of WRP populations in the area is restricted by the presence of Common Brushtail Possums, which outcompete WRPs for territory and hollows. Consequently, impacts to WRPs resulting from clearing activities at the bridge site are expected to be minimal.

4.2.2.3 Aquatic fauna

While the bridge works are likely to have some localised, short-term impacts on the native aquatic fauna present within and downstream of the construction footprint. HBI Institute (2025) note it is likely that the site will be rapidly recolonised by teleosts and decapods from adjoining river reaches once the works are completed and no long-term impacts to the aquatic fauna community are expected (Harry Butler Institute (HBI) Murdoch University, 2025).

4.2.2.4 Carters Freshwater Mussel

A Carters Freshwater Mussel management plan has been developed for the species to minimise impact resulting from works within the Collie River. Prior to decommissioning the existing bridge structure, pre-clearance searches will be undertaken according to the management plan and all mussels found will be relocated for the duration of the works. The SW Environmental (2025b) targeted survey for CFM, noted that the bridge construction works are likely to have direct physical impacts on local populations of *W. carteri* which were observed within the DE. Estimates of abundance based on the survey results suggest that:

– a disturbance footprint of 60 m^2 would require relocation of approximately 2,500 mussels.
– a disturbance footprint of 100 m^2 would require relocation of approximately 6,200 mussels.

The targeted CFM survey by SW Environmental (2025b) recommended that relocation of potentially impacted mussels would be required and a CFM Management Plan (CFM MP) would need to be prepared to describe the process. Removal of mussels for relocation would be difficult in some upstream areas due to soft sediments and depth, and the presence of mussels throughout off-bank habitat. The CFM MP developed by SW Environmental (2025d) will guide relocation of CFM prior to construction and has been informed by the construction footprint and methodology.

4.3 Potential impacts to erosion, flooding and salinity

There is potential for erosion, flooding and salinity impacts during the construction works. The surface water hydrological environment is expected to be maintained. The proposed clearing is not expected to increase the incidence of flooding increase salinity or erosion along drainage lines due to the limited clearing extents within the DE. There will be an EMP prepared by the successful construction company to manage identified risks to flooding and surface water quality during construction.

5. Environmental management framework

The Shire will use the hierarchy of avoid, minimise, reduce and rehabilitate to mitigate the environmental impacts of the works. Potential impacts to the following environmental factors have been considered during avoidance, mitigation and establishing appropriate management efforts:

– Vegetation and flora
– Fauna habitat.

Impact avoidance, mitigation and management measures are detailed in Section 5.1.1 to Section 5.2.1.

5.1 Impact avoidance and minimisation through design

5.1.1 Flora and Vegetation

The Shire has considered alternative designs for the Project in order to minimise environmental impacts while maximising efficiency and cost effectiveness. Avoidance of clearing of native vegetation, including riparian vegetation along the Collie River, has been implemented throughout the design process. A description of the avoidance measures is included below:

– The laydown, truck turn around, and site facilities are sited in a previously cleared area (Figure 3).
– The proposed clearing to allow for crane movement is limited to the minimum area required (Figure 2).
– The proposed clearing for bridge works limited to the minimum area required.

5.2 Impact avoidance and management measures applied on site

5.2.1 Loss of flora, vegetation and fauna habitat

To minimise environmental impacts in and adjacent to the proposed clearing area, the Shire will implement the following management and mitigation measures:

– Demarcation of the Disturbance Footprint to prevent clearing beyond the approved Clearing Area.
– Demarcation of any significant trees that are to be retained.
– Qualified and licenced fauna spotter on site while clearing is underway, particularly for Western Ringtail Possum.
– All clearing to occur during daylight hours.
– All clearing to occur south to north to enable fauna to move into retained vegetation areas.
– Implementation of Phytophthora (Dieback) and hygiene management practices during clearing and construction.
– Implementation of a speed limit of 40 km/hour for vehicle movements to reduce potential for fauna strikes.

6. Assessment against the 10 clearing principles

The clearing of vegetation in Western Australia is regulated by DWER and requires a permit under Part V of the EP Act, except when a project is assessed under Schedule 6 of the Act or is prescribed by regulation in the *Environmental Protection (Clearing Native Vegetation) Regulations 2004*.

To determine the outcome of a clearing permit application under section 51O of the EP Act, the CEO of DWER must consider the clearing principles contained in Schedule 5 of the EP Act, so far as they are relevant to the matter under consideration. The ten clearing principles aims to ensure that potential impacts resulting from removal of native vegetation can be assessed holistically.

To support the NVCP application for the project, an assessment of the proposed clearing against the ten clearing principles outlined in Schedule 5 of the EP Act has been undertaken and presented in Table 7.

The assessment was undertaken with reference to DWER guideline *A guide to the assessment of applications to clear native vegetation under Part V Division 2 of the* Environmental Protection Act 1986 (DWER, 2014).

Table 7 10 Clearing Principles Assessment

10 clearing permit principles full assessment	Outcome
a. Native vegetation should not be cleared if it comprises a high level of biological diversity.	**Proposal may be at variance to this principle.**

Assessment:

The Project requires clearing of up to 0.08 ha of native vegetation within a DE of 0.26 ha to enable decommissioning and replacement of an aging bridge across the Collie River. The clearing has been restricted to only those areas crucial for the construction activities to allow access by the crane for removal of the existing bridge and works for the new bridge. Laydown areas and other ancillary requirements have been preferentially sited in cleared areas.

Vegetation

A single-phase detailed flora and vegetation survey was undertaken by Ecoedge for the Project, during spring of 2024 (Ecoedge, 2024). Two vegetation units were described and mapped for the survey area. Unit A comprised the riverine vegetation adjacent to the Collie River. It formed an open forest dominated by *Eucalyptus rudis* subsp. rudis (Flooded gum), *Corymbia calophylla* (Marri) and occasionally *Eucalyptus patens* (Blackbutt). Unit B is comprised of the open forest dominated mainly by *Corymbia calophylla* (Marri) which occurs on rocky clay-loam soils upslope of unit A.

Ecoedge (2024) observed that most of vegetation unit A (75%) was in Good or Very Good condition in contrast to unit B of which 90% was in Degraded or Completely Degraded condition. This reflects the pattern of clearing and grazing. Vegetation unit A, which is subject to flooding, and was consequently less subject to clearing and grazing.

TEC/PEC

Desktop searches of the DBCA Threatened and Priority Ecological Communities database and EPBC Act PMST indicated the presence of one EPBC listed community and EPA listed community with the potential to occur within 10 km to the Project area:

– 'Banksia Woodlands of the Swan Coastal Plain' - a federally listed TEC consisting of numerous State-listed communities (EPBC Threatened, EPA P3)

Neither of the vegetation units in the survey area is representative of a Threatened or Priority ecological community. However, unit A, being a riverine vegetation type, with conservation value for its role in protecting the riverbanks and because much of the riverine vegetation of the Collie River downstream of the survey area has been cleared or severely degraded.

The Collie River Ecological Linkage intersects the survey area, following the path of the river and providing a corridor of vegetation that has been assigned the highest tier of PV rating - 1a. This rating has been assigned because the vegetation is in proximity to the river linkage and its connectivity to Wellington National Park to the south and east of the survey area. There are no ESAs mapped within or in proximity to the survey area.

Flora

The desktop assessment identified 9 significant flora species within 10 km of the Project area that are known to occur from historical records in the DBCA Threatened and Priority Flora database, WA Herbarium database or may occur as identified in the EPBC Act PMST search results (DCCEEW, 2025). The desktop searches recorded:

– One Critically Endangered and one Vulnerable species under the EPBC Act.

– Two Threatened species under the BC Act and one Priority 1 (P1), two Priority 2, one P3, and three P4 by the DBCA.

No Threatened flora listed under the State BC Act or Commonwealth EPBC Act were found within the survey area. Neither were there any State listed Priority flora or flora of other significance found within the survey area.

10 clearing permit principles full assessment	Outcome
All 57 Threatened or Priority taxa potentially occurring in the survey area were assigned a post-survey residual likelihood of “unlikely”. Flora diversity was considered average, with a total of eighty-four taxa were identified within the survey area with 50 (60%) introduced species. The most numerous families were the Myrtaceae family (13 species, two introduced) and Poaceae family (nine taxa, eight introduced species). The native vegetation is considered to comprise a moderate level of biological diversity compared to the surrounding area and is anticipated to regrow in these areas. **Fauna** The survey outlined six terrestrial habitat types based on the predominant landforms, soil and vegetation structure in the area, and a single aquatic habitat type. Fauna habitat across the six terrestrial types, ranged from Nil to High across the three local black cockatoo species. Twenty-two fauna taxa were observed within the Survey Area during the surveys. Recorded taxa included 14 birds, six mammal, one frog and one bivalve. Significant fauna observed during the survey consisted of FRTBC (Vulnerable), Baudin’s cockatoo (Endangered) and CFM (Vulnerable). Two black cockatoo roosts were recorded within the Survey Area, one being a Baudin’s cockatoo roost and the other being FRTBC. The roosts only appeared to be utilised by small family groups and had low amounts of whitewash, indicating they might be temporary. No current black cockatoo breeding hollows were recorded during the survey. Based on significant fauna known to occur in the area, the terrestrial habitat is also considered suitable habitat for Carnaby’s cockatoo, Quenda, Woylie, Chuditch, South-western Brush-tailed Phascogale, Western False Pipistrelle, Western Brush Wallaby and Quokkas. Further black cockatoo taxa are likely to utilise the site for foraging. **Fauna Habitat** A riverbed habitat type was also identified as being used by aquatic species including the Carters Freshwater Mussel (CFM) (*Westralunio carteri*) (Vulnerable). A targeted survey to determine the extent within the Collie River watercourse was undertaken by SW Environmental (2025b). The area of impact both upriver and downstream of the bridge will require relocation of the CFM. The method for relocating the mussels and where they are best relocated has been outlined in the management plan being prepared by SW Environmental. The terrestrial fauna habitat was evaluated to be moderately connected, with approximately 60% of the perimeter buffered by intact native vegetation. This high connectivity supports fauna movement into and through the survey area. Given that the vegetation proposed to be cleared is in poorer condition and bounding extensive areas of intact native vegetation, the area is unlikely to contain a relatively high level of fauna diversity. **Conclusion** The Project will result in vegetation and habitat loss through direct impacts to 0.11 ha of fauna habitat, surveyed as potential Carnaby’s Black Cockatoo foraging habitat. There are 18 trees being cleared, with 6 trees that would meet the criteria as potential Black Cockatoo breeding habitat trees (diameter at breast height greater than or equal to 50 cm) or for night roosting, however there was no indication of these trees being used by BC’s. There are no known breeding hollows for Black Cockatoo species in any of these trees. Clearing of 0.02 ha of riparian veg will also be required to remove the existing bridge structure and access the river to install the new bridge structure. The native vegetation is considered to comprise a moderate level of biological diversity congruent with the surrounding areas. Therefore, it is considered that the proposed clearing may be at variance to this Principle.	
b. Native vegetation should not be cleared if it comprises the whole, or part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia.	**Proposal is at variance to this principle.**
Assessment: **Fauna** Desktop assessment using DBCA Threatened and Priority Fauna database historical records and PMST search for records under the EPBC Act identified fauna that may occur or have been recorded within Survey Area (10 km). The desktop searches yielded 209 vertebrate terrestrial fauna species including: – 10 amphibians – 151 birds – 18 mammals – 29 reptiles The species of significance listed in the PMST search: **Birds** – *Botaurus poiciloptilus* (Australasian Bittern) - EN – *Zanda baudinii* (Baudin’s Black Cockatoo) – EN – *Zanda latirostris* (Carnaby’s Black Cockatoo) – EN – *Calyptorhynchus banksii naso* (Forest Red-tailed Black-Cockatoo) – VU – *Falco hypoleucos* (Grey Falcon) – VU – *Leipoa ocellata* (Malleefowl) – VU	

10 clearing permit principles full assessment	Outcome

Mammals

– *Bettongia penicillata* ogilbyi (Woylie) – EN
– *Myrmecobius fasciatus* (Numbat) - EN
– *Dasyurus geoffroii* (Chuditch) – VU
– Setonix brachyurus (Quokka) – VU
– Pseudocheirus occidentalis (Western Ringtail Possum) – CR

Invertebrates

– *Westralunio carteri* (Carters Freshwater Mussel) – VU.

Of the 11 significant fauna (Threatened and Priority listed species) identified in the desktop searches, 3 EPBC listed species were recorded during the field survey, with 2 further species considered likely:

Recorded:

– *Calyptorhynchus banksii naso* (Forest Red-tailed Black Cockatoo) – VU
– *Zanda baudinii* (Baudin's Black Cockatoo) – EN
– *Westralunio carteri (Carters Freshwater Mussel)* – VU.

Likely:

– *Zanda latirostris* (Carnaby's Black Cockatoo) – EN
– *Pseudocheirus occidentalis* (Western Ringtail Possum) – CR

Several fauna taxa that were returned in desktop searches are introduced or naturalised. Invertebrates and fully aquatic species were excluded from the above summary.

Some taxa that were associated with watercourses but not exclusively aquatic were included in the above summary, being the Northern Snake-necked Turtle and Rakali. Freshwater aquatic taxa returned locally within desktop searches included Balston's Pygmy Perch, CFM, and the Pouched Lamprey.

Twenty-two fauna taxa were observed within the Survey Area during the surveys. Recorded taxa included 14 birds, six mammal, one frog and one bivalve. Significant fauna observed during the survey consisted of FRTBC (Vulnerable), Baudin's cockatoo (Endangered) and CFM (Vulnerable).

Fauna habitat

The survey outlined six terrestrial habitat types based on the predominant landforms, soil and vegetation structure in the area, and a single aquatic habitat type. Fauna habitat across the six terrestrial types, ranged from Nil to High across the three local black cockatoo species. A Riverine habitat type was also identified by SW Environmental (2025a)as being used by aquatic species including the CFM (*Westralunio carteri*) (Vulnerable).

A Targeted survey identifying the extent of CFM inhabiting the Collie River watercourse was undertaken by SW Environmental (SW Environmental, 2025b). The area of impact within the river will require relocation of CFM which currently inhabit the area where construction works are occurring and where the temporary causeway is located, the relocation methodology will be outlined in a CFM management plan.

The habitat was evaluated to be moderately connected, with approximately 60% of the perimeter buffered by intact native vegetation. This high connectivity supports fauna movement into and through the survey area. Given that the vegetation proposed to be cleared is in poorer condition and bounding extensive areas of intact native vegetation, the area is unlikely to contain a relatively high level of fauna diversity.

Conclusion

The Project will result in habitat loss through direct clearing of up to 0.08 ha of native vegetation, which is potential Carnaby's Black Cockatoo foraging habitat. There are 6 trees proposed for clearing that would meet the criteria as potential Black Cockatoo breeding habitat trees (diameter at breast height greater than or equal to 50 cm) or for night roosting. There are no known breeding hollows for Black Cockatoo species in any of these trees. Clearing of 0.02 ha of riparian veg will also be required to remove the existing bridge structure and access the river to install the new bridge structure.

The native vegetation is considered to comprise a moderate level of biological diversity, similar to surrounding areas. However, significant fauna species such as Carnaby's Black Cockatoo are unlikely to be solely reliant on the native habitats within the survey area. The impacts to CFM are unlikely to

This vegetation is unlikely to provide significant habitat values or support indigenous fauna given the significant percentage of cleared, degraded, and completely degraded vegetation in the area. The area has direct connectivity to remnant vegetation and as proposed clearing is limited to adjacent to the existing road where it crosses the Collie River, it is considered unlikely to further fragment fauna habitat in the local area.

It is considered that the proposed clearing is at variance to this Principle.

10 clearing permit principles full assessment	Outcome
c. Native vegetation should not be cleared if it includes, or is necessary for the continued existence of rare flora.	**Proposal is not likely to be at variance to this principle.**

Assessment

The desktop assessment identified nine significant flora species within 10 km of the survey area that are known to occur from historical records of the DBCA Threatened and Priority Flora database and WA Herbarium database or potentially occur in the Study area as identified in the EPBC Act PMST search results (DCCEEW, 2025). The desktop searches recorded:

– The PMST search identified the potential presence of one Critically Endangered and one Vulnerable species under the EPBC Act.

– The DBCA database search identified historical records of two Threatened species under the BC Act and one Priority 1 (P1), two Priority 2, one P3, and three P4 by the DBCA.

No Threatened flora listed under either the State BC Act or Commonwealth EPBC Act were found within during the survey (Ecoedge, 2024). Neither were there any State listed Priority flora or flora of other significance found within the survey area. All 57 Threatened or Priority taxa potentially occurring in the survey area were assigned a post-survey residual likelihood of “unlikely”.

Flora diversity was considered average, with a total of eighty-four taxa were identified within the survey area with 50 (60%) introduced species. The most numerous families were the Myrtaceae family (13 species, two introduced) and Poaceae family (nine taxa, eight introduced species).

Proposed clearing of vegetation is considered unlikely to impact Threatened flora listed under the EPBC or BC Act and therefore is considered not likely to be at variance with this principle.

d. **Native vegetation should not be cleared if it comprises the whole or part of, or is necessary for the maintenance of a threatened ecological community (TEC).**	**Proposal is not at variance to this principle.**

Assessment

Desktop searches of the DBCA Threatened and Priority Ecological Communities database and EPBC Act PMST indicated the presence of one EPBC listed community and EPA listed community with the potential to occur within 10 km to the Project area:

– ‘*Banksia Woodlands of the Swan Coastal Plain*’ - a federally listed TEC consisting of numerous State-listed communities (EPBC Threatened, EPA P3)

Neither of the vegetation units in the survey area is representative of a Threatened or Priority ecological community.

The proposed clearing is not at variance to this principle.

e. Native vegetation should not be cleared if it is significant as remnant vegetation in an area that has been extensively cleared.	**Proposal is not likely to be at variance to this principle.**

Assessment

The survey area is located within the Jarrah Forest Interim Biogeographic Regionalisation for Australia (IBRA) bioregion, specifically within the Northern Jarrah Forest (JAF01) IBRA subregion.

Broadscale (1:250,000) pre-European vegetation mapping of the area completed by Beard (1976) at an association level, with one vegetation association present within across the DE:

– association 1184 ‘Medium woodland-fringing; jarrah, marri, *Eucalyptus rudis* & *Agonis flexuosa*

Association 1148 exceeds the 30% Commonwealth retention target at all levels, with 39.54% of State-wide pre-European extent vegetation remaining, 39.54% remaining at IBRA region level and 38.47% remaining at IBRA subregion level. The Shire of Dardanup has 48.73% of extent vegetation remaining and the Shire of Harvey 32.20% remaining.

The proposed clearing of 0.08 ha of native vegetation will result in less than 1% reduction in the current extent of vegetation association 1148 within the Shires. The proposed clearing will not impact the maintenance of ecological values in the landscape.

The proposed clearing is not at variance to this principle.

f. Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.	**Proposal is at variance to this principle.**

10 clearing permit principles full assessment	Outcome
Assessment The Project area is located in the Swan-Avon/ Lower Swan catchment with the Swan Coastal Basin. Desktop assessment identified the following hydrological landmarks within 10 km of the Project area: – Hydrography, Linear (Hierarchy) (DWER-031) – Collie River intersects with the survey area – RIWI Act, Surface Water Areas and Irrigation Districts (DWER-037) – Collie Irrigation System – Geomorphic Wetlands of the Swan Coastal Plain (DBCA-019) – multiple use palusplain (UFI 2897) located approximately 805 m to the north west The Collie River, a perennial watercourse, intersects the proposed clearing area with a small area within the DE surveyed as riparian vegetation and habitat (0.02 ha). The proposed clearing of riparian vegetation associated with the Collie River is not considered to significantly impact connectivity. The cleared area represents approximately 10% of the surveyed riparian vegetation within the DE. The Proposal has direct connectivity to remnant vegetation along the Collie River and as clearing is proposed to be limited to adjacent to existing road reserve it is considered unlikely to further fragment fauna habitat in the local area. Mitigation measures proposed as part of the project will minimise the impacts to riparian vegetation where possible, using a Construction Management Plan (CEMP) to further manage impacts. The proposed clearing is at variance to this principle.	
g. Native vegetation should not be cleared if the clearing of vegetation is likely to cause appreciable land degradation.	**Proposal is not likely to be at variance to this principle.**
Assessment Based on the Natural Resource Management Soil Systems and CSIRO risk mapping, the soil landscape includes the Western Darling Range soil landscape zone (DPIRD, 2022a) and soil landscape system of Lowden Valley (255Lv) (DPIRD, 2022b). The risk mapping indicates a low salinity risk (DPIRD-009), a low water erosion risk (DPIRD-013) and a low Acid Sulfate Soil (ASS) risk (DWER-055) (DWER, 2017). Clearing of intact vegetation has the potential to exacerbate the spread of weeds through an area. Strict hygiene measures will be implemented during construction to minimise movement of weeds during clearing and construction activities. Works are unlikely to require any dewatering, or excavations below the water table. Design and methodology for construction will avoid dewatering through the installation of a temporary causeway in the Collie River during works. Standard control measures will be included in the CEMP, and implemented during works to minimise erosion, sedimentation and dust causing impacts during construction. Given the clearing of 0.08 ha of vegetation is adjacent to the Collie River and the control measures being implemented, there is not likely to be an appreciable increase in land degradation due to the proposed clearing. The proposed clearing is not likely to be at variance to this principle.	
h. Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.	**Proposal is not likely to be at variance to this principle.**
Assessment No conservation areas are located within the DE and therefore will not be directly impacted by the proposed clearing. Flow will be maintained throughout construction, providing environmental water requirements throughout construction. There may be some temporary impacts to water quality during construction activities including during installation and decommissioning of the temporary causeway. Works are unlikely to require any dewatering, or excavations below the water table. Design and methodology for construction avoids dewatering by using a temporary causeway during construction works in the Collie River. The CEMP will include standard erosion, sedimentation and dust management control measures which will be implemented during construction works. Leschenault Estuary is located 20 km downstream, however the use of silt curtains and other measures which will be included in the CEMP, will maintain water quality throughout construction. The proposed clearing will not impact the environmental values of conservation areas and is therefore not at variance to this principle.	
i. Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.	**Proposal is not likely to be at variance to this principle.**

10 clearing permit principles full assessment	Outcome
Assessment The DE is located on the Collie River upstream of the Leschenault Estuary. There are no other wetlands or watercourses nearby. Construction works will only temporarily impact the surface water quality in the Collie River. The construction will include the installation of a temporary causeway which will maintain river flow throughout. Standard construction management measures for erosion and sediment control (including topsoil management) will be included as part of a Construction EMP and implemented during works to manage the risks of erosion within cleared areas. It is considered unlikely that the small scale clearing of vegetation adjacent to the Collie River Road and the existing bridge would disturb or interrupt any natural drainage and surface water run-off patterns and is unlikely to alter the groundwater quality in the local area. Proposed clearing of up to 0.08 ha native vegetation is unlikely to cause any deterioration in the quality of surface or underground water. The proposed clearing is not likely to be at variance with this Clearing Principle.	
j. Native vegetation should not be cleared if the clearing of vegetation is likely to cause, or exacerbate, the incidence of flooding.	**Proposal is not likely to be at variance to this principle.**
Assessment Field surveys show the area's vegetation grows on loamy, gravelly, and stony soils across gently undulating terrain. Project soils are mapped as low flood or waterlogging risk (DPIRD-007). The region receives an average of 684.2 mm annual rainfall, mostly between May and September (BOM, 2025). Construction will use a temporary causeway to avoid dewatering or excavating below the water table, with clearing scheduled for summer and causeway removal after project completion. The CEMP will include standard erosion, sediment, and dust controls will be in place. Due to the area and scale of the works, the proposed clearing is unlikely exacerbate the incidence of intensity of flooding and is therefore not at variance to this principle.	

7. Other approvals

Following review of approval requirements under the EP Act, the following approvals are not considered necessary for the purpose of the Proposal:

– *Planning and Development Act 2005*
– Works Approval or Licence under Part V of the EP Act
– Referral to DCCEEW for assessment under the EPBC Act
– State or municipal heritage approvals

7.1 Referral to the EPA

The activities described in this application for the Proposal, are not considered to be a significant impact under s38 of the *EP Act* and therefore will not be referred to the EPA.

7.2 Approvals under the RiWI Act

A Bed and Banks Permit is required to disturb the bed and banks of the Collie River under the *Rights in Water and Irrigation Act 1914* (RiWI Act). Approval via a Bed and Banks Permit will be sought in accordance with the RiWI Act prior to the Proposal construction activities.

7.3 Aboriginal Cultural Heritage

Aboriginal Cultural Heritage sites for the Proposal have been identified from a desktop assessment using the ACHIS spatial dataset (DPLH, 2024). The Collie River Waugal (ACH-00016713) Aboriginal Cultural Heritage Place is located within the DE. Gnaala Karla Booja (GKB) has been engaged to undertake an Aboriginal Heritage survey and any identified disturbance to Aboriginal Cultural Heritage values will be managed under a s18 approval under the *Aboriginal Heritage Act 1972*.

7.4 Referral to the DCCEEW

The decision whether to refer the Proposal to DCCEEW is based upon whether it may have a significant effect on Matters of National Environmental Significance (MNES), protected under the EPBC Act. These include World Heritage properties, National Heritage places, wetlands of international importance (listed under the Ramsar convention), Commonwealth land or marine areas, migratory species protected under international agreements, nuclear actions, nationally threatened species and ecological communities and water resources.

SW Environmental (2025c) provided an assessment of significance for potential impacts to MNES from the Proposal. Based on this assessment, the Proposal will not have a significant impact on MNES or impact Commonwealth land and therefore a referral is not required.

8. Offsets

The assessment against the ten clearing principles concluded the Proposal won't require offsets to compensate for the residual impacts associated with the proposed clearing.

9. Conclusion

Implementation of the Proposal will involve clearing of 0.083 ha of native vegetation within a 0.26 ha Development Envelope, accounting for less than 2.5% of the surveyed vegetation. No Threatened or Priority-listed flora, nor flora of conservation significance, were identified within the area to be cleared, and therefore impacts to these species are not anticipated. While up to 0.11 ha of fauna habitat (including 0.02 ha of riparian vegetation) and six significant trees will be removed, none of the trees are suitable for Black Cockatoos and the clearing is not expected to significantly affect Black Cockatoos or Western Ringtail Possums.

The Proposal may reduce water quality during construction and have some localised, short-term impacts to aquatic fauna within and downstream of the construction footprint, no long-term impacts to the aquatic fauna are expected. Bridge construction works are likely to have direct physical impacts on local populations of Carters Freshwater Mussels (CFM) observed within the DE, and relocation of potentially impacted mussels would be required. The Carters Freshwater Mussel Management Plan (CFM MP) will guide relocation of CFM outside the construction footprint and will be updated based on the final design and construction methodology.

The Shire has used the hierarchy of avoid, minimise, reduce and rehabilitate to mitigate the environmental impacts of the works through revision of the designs during the planning process. The Proposal may have indirect impacts to fauna habitat due to introduction and/or spread of weeds and vehicle strike, however these will be managed via a Construction EMP (CEMP). The Proposal is not expected to increase the incidence of flooding, increase salinity or erosion along drainage lines due to the limited clearing and disturbance within the DE. The CEMP will include measures to manage flood risk potential and maintain surface water quality during construction based on the final design and construction methodology.

A significance assessment in accordance with the *Significant Impact Guidelines 1.1 - Matters of National Environmental Significance* (DEWHA, 2013) was undertaken to identify any residual environmental impacts requiring approval under other environmental legislation, including the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act). The significance assessment noted that while there may be residual impacts to CFM from construction works occurring within the Collie River, the potential impacts can be sufficiently managed through the implementation of a suitable Carters Freshwater Mussel Management Plan.

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